

WHAT IS CLAIMED IS:

1. A reinforced flexible tape comprising:  
a plurality of semiconductors mounted to a flexible tape;  
at least two side bars in mechanical communication with said flexible  
5 tape; and  
a plurality of cross bars in mechanical communication with said  
flexible tape, whereby said side bars and said cross bars provide rigidity  
during the manufacturing process.
2. The reinforced flexible tape of Claim 1, wherein said flexible tape  
10 comprises a first plurality of indexing holes and wherein said side bars include a  
second plurality of indexing holes substantially aligned with said first plurality of  
indexing holes.
3. The reinforced flexible tape of Claim 1, wherein said flexible tape  
further comprises at least two side rails and wherein said side bars are substantially  
15 aligned with said side rails.
4. The reinforced flexible tape of Claim 1, wherein said flexible tape  
further comprises end rails and wherein said end bars are substantially aligned with  
said end rails.
5. The reinforced flexible tape of Claim 1, wherein said flexible tape  
20 comprises cross rails that are substantially aligned with said cross bars.
6. The reinforced flexible tape of Claim 1, wherein said flexible tape is  
adapted to electrically interface with said plurality of dies.
7. An assembly, comprising:  
a substrate film; and  
25 a carrier comprising side bars which are in mechanical  
communication with said substrate film.
8. The assembly of Claim 7, wherein said side bars are BT resin.
9. The assembly of Claim 7, wherein said side bars are a thickened layer  
of polyimide.
- 30 10. The assembly of Claim 7, wherein said side bars are layers of  
polyimide.

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11. The assembly of Claim 7, wherein said side bars are layers of copper.
12. The assembly of Claim 7, wherein said side bars are layers of solder resist.
13. The assembly of Claim 7, wherein said side bars have alignment holes formed therein.
14. The assembly of Claim 7, wherein said carrier further comprises cross bars which are in mechanical communication with said substrate film.
15. The assembly of Claim 7 wherein said cross bars are BT resin.
16. The assembly of Claim 7, wherein said cross bars are a thickened layer of polyimide.
17. The assembly of Claim 7, wherein said cross bars are layers of polyimide.
18. The assembly of Claim 7, wherein said cross bars are layers of copper.
19. The assembly of Claim 7, wherein said cross bars are layers of solder resist.
20. An assembly, comprising:  
a film including a plurality of substrate units with said plurality of substrate units being adapted to electrically interface with a plurality of dies;  
and  
a carrier in mechanical communication with said film for providing enhanced rigidity to said film by being sized and configured to add material at selected regions of said film.
21. The assembly of Claim 20, wherein said plurality of substrate units are grouped into substrate sets.
22. The assembly of Claim 21, wherein said substrate sets comprises three substrate units.
23. The assembly of Claim 22, wherein said carrier further comprises a plurality of cross bars and wherein each cross bar is located near a substrate set.
24. The assembly of Claim 20, wherein said plurality of dies comprise lead-over-chips (LOC).

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25. The assembly of Claim 20, wherein said plurality of dies comprise lead-under-chips (LUC).

26. The assembly of Claim 20, wherein said film comprises polyimide.

27. The assembly of Claim 20, wherein each one of said plurality of substrate units includes a substantially central cavity.

28. The assembly of Claim 20, wherein each one of said plurality of substrate units is flanked by a pair of slots.

29. The assembly of Claim 20, wherein each one of said plurality of substrate units includes a pair of adhesive tabs.

30. The assembly of Claim 20, wherein each one of said plurality of substrate units includes a plurality of alignment holes.

31. An assembly for attachment of integrated circuits, comprising:

a film including a plurality of substrate units;

a plurality of dies in electrical contact with said plurality of substrate units; and

a carrier in mechanical communication with said film for providing enhanced rigidity to said film.

32. The assembly of Claim 31, wherein said plurality of dies is wire bonded to said plurality of substrate units.

33. The assembly of Claim 31, wherein said film comprises a thin, flexible tape.

34. The assembly of Claim 31, in combination with a plurality of encapsulating devices to form a plurality of ball-grid-array (BGA) packages.

35. A method for supporting a substrate film comprising:

connecting side bars to a substrate film; and

connecting cross bars to said substrate film, whereby said side bars and said cross bars provide rigidity during the manufacturing process.

36. The method of Claim 35, wherein said act of connecting side bars comprises substantially aligning a plurality of indexing holes in said side bars with a plurality of indexing holes in said substrate film.

37. The method of Claim 35, wherein said act of connecting said side bars substantially aligns said side bars with side rails in said substrate film.

38. The method of Claim 35, wherein said act of connecting said cross bars substantially aligns said cross bars with cross rails in said substrate film.

5 39. The method of Claim 35 further comprising the act of interfacing said substrate film with a plurality of dies.

40. A method of manufacturing an assembly comprising:  
connecting side bars to a substrate film;  
transporting said side bars and said substrate film through a  
10 manufacturing process; and  
removing said side bars after at least a portion of said manufacturing process.

41. The method of Claim 40 further comprising the act of constructing said side bars with BT resin.

15 42. The method of Claim 40 further comprising the act of constructing said side bars with a thickened layer of polyimide.

43. The method of Claim 40 further comprising the act of combining layers of polyimide to construct said side bars.

20 44. The method of Claim 40 further comprising the act of combining layers of copper with a polyimide film to construct said side bars.

45. The method of Claim 40 further comprising the act of combining layers of solder resist with a polyimide file to construct said side bars.

25 46. An method of processing semiconductor dies comprising:  
forming a plurality of substrate units within a film;  
interfacing said substrate units with a plurality of dies;  
adding support material at selected regions of said film so as to provide enhanced rigidity to said substrate units; and  
removing at least a portion of said support material at the completion of at least a portion of a manufacturing process.

30 47. The method of Claim 46 wherein the act of interfacing said substrate units connects leads from said dies to said substrate units.

48. The method of Claim 46 wherein the act of interfacing said substrate units connects leads over said dies to said substrate units.

49. The method of Claim 46 wherein the act of interfacing said substrate units connects leads under said dies to said substrate units.

5 50. The method of Claim 46 further comprising the act of forming a central cavity in said substrate units.

51. The method of Claim 46 wherein said act of adding said support material connects support edges to said film.

10 52. The method of Claim 46 wherein said act of adding said support material thickens the edges of said film.

53. The method of Claim 46 wherein said act of adding said support material connects support cross bars to said film.

15 54. A method of manufacturing integrated circuits comprising:  
forming a plurality of substrate units within a substrate film;  
interfacing a plurality of dies to said plurality of substrate units; and  
connecting a carrier to said film to enhance the rigidity of said film.

55. The method of Claim 54 wherein the act of interfacing wire bonds said dies to said plurality of substrate units.

20 56. The method of Claim 54 further comprising the act of forming said film with a flexible tape.

57. The method of Claim 54 further comprising the act of removing said substrate units from said substrate film.

58. The method of Claim 54 further comprising the act of forming holes in said carrier.

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